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Andy

25X1

[redacted]

25X1

Rec'd ED 4/24/59 1600

ILLEGIB

April 20, 1959

[redacted]

Dear Sir:

This letter report summarizes the research performed under Task Order No. HH from March 4 to April 6, 1959.

During this research period, the cutting action of reciprocating- and rotary-type cutting tools was investigated using battery-operated, hand-operated, and standard electrically operated power tools [redacted] As a result of this investigation, a cutting device was developed that consisted of a modified tap wrench and a tapered high-speed-steel bur. With this tool, material was removed [redacted] rapidly and quietly,

25X1

25X1

[redacted]

25X1

The investigation of rotary-type cutting tools included consideration of small dental burs and standard high-speed-steel burs used in the metal-cutting industry. The power source employed ranged from a battery-operated motor to hand tools such as a hand brace, hand drilling unit, spiral-actuated automatic screwdriver, and tap wrench. The study of the reciprocating-type cutting tools involved spiral saw blades up to 0.074 inch in diameter, various files, and flat saw blades. The power supply used for these cutting tools included a standard power tool with a saber-saw attachment and various hand tools which could be employed to facilitate filing and sawing

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DOC 6 REV DATE 26/6/80 BY 37169
ORIG COMP 56 OPI 56 TYPE 1
ORIG CLASS S PAGES 3 REV CLASS C
JUST 22 NEXT REV 2010 AUTH: HR 70-2

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operations. In the experiments to explore the performance of the various cutting tools, [redacted] so that 25X1 the cutting action and the associated noise could be realistically evaluated. The results of this evaluation showed that the noise was a function of primarily the speed at which the cutting tool was used and that the shape and cut of the cutting tool were secondary factors. We were able to manually operate the cutting tools more quietly and with the torque and cutting rate controlled over a wider range than was possible with any of the power devices.

In our work with the hand drilling units and with a spiral-operated automatic screwdriver using burs, it became apparent that a [redacted] could be removed in one cut 25X1 with a bur which was approximately 3/16 inch in diameter. With a hand drilling unit and a tapered right-hand spiral, medium-cut bur with a chip breaker, material was removed rapidly and quietly. The use of this cutter inserted in a tap wrench further improved the over-all operation and the control of the cutting action. The tap wrench was modified subsequently so that the handles would be collapsible; this type of handle used with a 7-degree-tapered bur, of 5/32-inch maximum diameter, was demonstrated to you on April 2, 1959. This demonstration showed that, with this cutting device, [redacted] 25X1 [redacted] could be very quietly modified in an appropriate manner 25X1 in less than 3 minutes. This bur was given to you for further evaluation.

During the coming month, the design of an appropriate "handle" will be studied; we are interested in evaluating the feasibility of

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using a scalloped knob or similar driving component to achieve greater ease of manipulation than that provided by the "T" handle of a tap wrench. Following this investigation, as agreed during a recent telephone conversation, two or three handles plus several high-speed-steel metal-removal burs, ranging from approximately 1/16 to 5/16 inch in diameter, will be sent to you for further evaluation.

The original appropriation on this Task Order was $5,305. As of April 1, 1959, the unexpended balance was approximately $1,700.

Sincerely,

[redacted]

25X1

ABW:mlm

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